WHAT IS CLAIMED IS:

1. A method of determine extrema of interference signals produced by a quadrature phase shift interferometer (QPSI), comprising the steps of:

obtaining I and Q signals from the QPSI;

determine zero-crossing points in the I signal;

peak detecting for peaks and valleys in the Q signal in close proximity to the zero-crossing points in the I signal, to thereby determine maximum and minimum points of the Q signal;

determining zero-crossing points in the Q signal, and

peak detecting for peaks and valleys in the I signal in close proximity to the zero-crossing points in the Q signal, to thereby determine maximum and minimum points of the I signal.

2. The method of claim 1, further comprising forming intensity envelopes from the determined maximum and minimum points of the I and Q signals.

3. The method of claim 2, wherein the step of forming intensity envelopes includes curve fitting to respectively link: the maximum points of the Q signal; the minimum points of the Q signal; the maximum points of the I signal; and the minimum points of the I signal.

4. The method of claim 3, wherein the step of curve fitting include selecting a curve fitting method based on decoding error analysis.

5. The method of claim 3, wherein the step of curve fitting includes performing second order polynomial curve fitting.

6. The method of claim 2, further comprising performing QPSI phase unwrapping using the intensity envelopes.

7. The method of claim 6, further comprising determining phase angle based on the intensity envelopes.

8. The method of claim 7, further comprising determining out-of-plane displacement of a recording media disk based on the determined phase angle.

9. An arrangement for determining intensity envelopes of interference signals, comprising:

a quadrature phase shift interferometer (QPSI) that generates interference signals I and Q; and

a processor configured to determine true maximum and minimum points from the interference signals I and Q and to create intensity envelopes from the true maximum and minimum points.

10. The arrangement of claim 9, wherein the processor is further configured to determine zero-crossing points in the I signal and detecting each maximum and minimum points of the Q signal located within close proximity at each zero-crossing point in the I signal, and to determine zero-crossing points in the Q signal and detecting each maximum and minimum point of the I signal located within close proximity of each zero-crossing point in the Q signal.

11. The arrangement of claim 10, wherein the processor is further configured to form curves from the detected maximum and minimum points of the I and Q signals.

12. The arrangement of claim 11, wherein the processor is further configured to form the curves by a curve fitting method.

13. The arrangement of claim 12, wherein the curve fitting method is a second order polynomial curve fitting method.

14. The arrangement of claim 13, wherein the processor is further configured to determine phase angle based on the created intensity envelopes.

15. The arrangement of claim 14, wherein the processor is further configured to determine out-of-plane displacement based on the determined phase angle.

16. A system for determining extrema of interference signals produced by a quadrature phase shift interferometer (QPSI), comprising:

a QPSI that generates I and Q signals; and

means for determining extrema of the I and Q signals based on zero-crossing points in the I and Q signals and detected peaks and valleys in the I and Q signals in close proximity to the zero-crossing points.

17. The system of claim 16, wherein the means for determining further includes means for forming intensity envelopes from the determined extrema.

18. The system of claim 17, wherein the means for determining further includes means for peak detecting for the peaks and valleys in close proximity to the zero-crossing points.

19. The system of claim 18, wherein the means for peak detecting includes means for peak detecting the for the peaks and valleys in the I signal that are in close proximity to

the zero-crossing points in the Q signal, and for the peaks and valleys in the Q signal that are in close proximity to the zero-crossing points in the I signal.

20. The system of claim 19, further comprising means for forming intensity envelopes from the determined extrema and performing a phase unwrapping based on the intensity envelopes.